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AN ENLARGED FOREST AREA A NECESSITY TO THE STATE.

John J. McKinney
BY J. P. BROWN, CONNERSVILLE.

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AN ENLARGED FOREST AREA A NECESSITY TO THE STATE.

BY J. P. BROWN, CONNERSVILLE.

It may seem paradoxical to assert that ninety acres will produce a greater income to the farmer who maintains one-tenth of his land in forest, than one hundred acres, all of which are cultivated in annual crops (and probably in a single instance that may be a wrong affirmation), yet if it were largely the practice of land-owners to preserve one acre in ten of their holdings as timber land, the benefits so derived would unquestionably far exceed the apparent loss of the uncultivated woodlands.

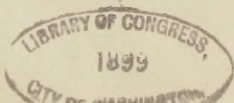
There was a time, while western farmers were surrounding their fields with living fences of Osage orange, when an outcry was heard that for several rods on each side the hedge no crops could be grown. Yet, experience proved that the falling leaves, blown a distance from the hedge, fertilized the fields greatly, while the shelter afforded by the living fence very materially benefitted the crops, and often the tallest corn and largest ears were found in the few rows nearest the hedge, they having received the greatest share of its beneficent influence.

Fifty years ago, peaches and apples were abundant in Indiana wherever these fruits were planted; fruit crops were not destroyed by insects or by frosts, and little care was required until time to gather the crop.

At that period the State was heavily wooded, except the portion of such farms as had been cleared, amounting, possibly, to one-fourth of their area.

Since that time, each year has witnessed the increasing size of the cultivated fields and diminishing proportion of woodland, until at present we have less timber than some of the western prairie States.

With the decrease of woodlands, there have come with great rapidity, noxious insects, seeking food and shelter in the orchard, field and garden.



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The inevitable relations between causes and resulting effects constitute the laws of nature; and when a nation interferes with God's inflexible laws, that people must abide the results.

Many of these insects formerly inhabited the native trees and plants in the great forests, and as these were destroyed, they have adapted themselves to the new order of things, as made by man, and now devour our plants and fruits. Nature provided checks upon the too rapid increase of insect foes. The wood, offering secluded nesting places for innumerable birds, resounded with joyous notes of these warblers; their natural food, wild berries, seeds and myriads of insects. Now all is changed. What few birds are permitted to live are insufficient to hold in check the insects, which increase immoderately.

Again, with the modifying influence of the forest, extremes of temperature were less than at present. Fruit buds are now destroyed with far greater frequency than formerly. If we have a crop of peaches one year in four, we rejoice when the fourth year comes. The millions of leaves and twigs and tree-tops in a great forest attract the moisture and cause frequent precipitations during the growing season. The rain in turn feeds and waters the trees, each dependent upon the other.

With the forests destroyed, the droughts of summer have become more severe each season, so that springs, rivulets and streams which formerly flowed the entire year, now become dry during the summer months. The elm trees and fir are dying by thousands, solely from drought, and other trees, attacked by insects, are unable to recover or overcome the attack, their vitality being so reduced by drought.

The apple suffers almost every year from this same cause, and other fruits are frequently seriously injured from want of water to supply the necessary sap.

Field crops are reduced in quantity, and impaired in quality, to far greater extent in recent years, since the removal of so vast an area of forest.

On slightly rolling lands, as well as in the steeper hills of southern Indiana, the erosion of the soil has been of such magnitude as to be appalling, and on account of the increased difficulties in tilling the soil, the young men are leaving the old farms and increasing the density of our overpopulated cities.

A railway official remarked to me recently, "Why, we have an abundance of timber in the country; I can look in every direction and see large forests in the distance from any point on our line." Yes, they are all in the distance. Go where you will, and see ahead a "will-o'-the-wisp" just beyond you, but when you approach, it is but a few remnants of a once noble forest; such trees as can neither be split into rails or firewood, nor yet be of value to the manufacturer.

There can be no plausible explanation given to this changed condition of the affairs of nature, other than a too rapid destruction of the forests.

The old world has passed through the same experience. Austria, France and Germany recognize it officially, and these governments require landed proprietors to maintain a certain amount of forest.

Spain's agriculture has degenerated from loss of her mountain forests. The pasturing of great herds of goats on her mountains has prevented a renewal of the timber. Syria, the dreary desert of to-day, was once a most fertile region while the cedars covered the Lebanon Mountains.

The olive, the vine and fig tree flourished in Solomon's time, while wheat fields and barley were so abundant as to merit a description in Holy Writ.

A nation threatened with war by some foreign foe makes an appeal to the patriotism of its people which is immediately responded to by every loyal citizen. All are ready to sacrifice personal interest for the preservation of their country.

A catastrophe more devastating than war menaces the American continent, and demands the highest proof of national patriotism. The effects of war are subdued in a decade, and obliterated in a generation. The climatic changes caused by man's reversal of nature's laws, in the removal of vast areas of timber, will not be revoked in centuries, unless there shall be a united effort upon the part of the government and all the people, to restore a reasonable portion of forest. Similar conditions, if not more disastrous, to those existing in Syria, in Spain, and the proud Roman nation, are sure to await America if this waste and destruction does not soon cease.

A half century hence, and fires, started by man's utter carelessness, will have completed the destruction of the forests on our western mountain sides, while the axe will have consummated its work of demolishing every vestige of timber upon the plain, unless a radical change is entered upon by our legislatures, backed by public sentiment. It is not too soon to warn the people of impending danger.

The effort of this appeal is to show the advantages to the individual land owner, in planting and maintaining not less than one-tenth of his land, and in many regions, a fourth, in timber trees, and to urge the State and National governments to some efforts which will result in forest extensions.

Of all the adversaries of shade trees, whether insects, bacteria, fungi or diseases of any character, there is no enemy so insidious, persistent and damaging as the electric lineman, acting, probably, under orders of his superiors.

Before a protest can be offered by one who has planted, watered and zealously cared for a few shade trees on the line of his property, lo! these many years, the lineman with his saw and axe has slipped in and so mutilated these trees that their value is forever gone (if the trees are not killed outright), without redress for the patient owner, for the lineman is irresponsible, and the company which employs and directs him have such a political pull with the powers that be, as to effectually bar any claims of the landholder.

Public opinion should condemn any electric company which pursues such damaging policy, and legislative action should prohibit the mutilation of any street tree without first obtaining the consent of the property owner in writing.

Almost every locality in Indiana possesses large establishments for manufacturing furniture, wagon work, carriages, building material, farm implements, and the thousands of articles made from wood, and for which, so far, no other material has been discovered which will serve the purpose as well as wood.

Every railway consumes large quantities of wood in construction and repairs of cars, in fences, and for cross ties.

Has it ever occurred to capitalists engaged in these manufactures, or to officials of the various railways, or to the landholders of our State, that an end must soon come to the supply of material which keep these industries in operation?

The principal wood now in demand, oak, is almost entirely brought from other States, and lumbermen who are best informed estimate that the supply in the entire United States will last less than a score of years.

Arkansas, Tennessee, the mountainous region of North Carolina and Virginia still have some oak timber, but it will be mostly exhausted by 1910. With the exhaustion of the oak, the supply of other woods rapidly diminishing (walnut, butternut, cherry, all are gone), hundreds of manufacturing factories will be compelled to close down, or be converted into other uses, while many thousands of our laboring citizens will have to seek other employment, and capital must obtain investment in other channels.

Writers upon forestry have dwelt upon the longevity of the oak, the great age of the sequoia, the vast length of time required for trees to reach maturity, overlooking the fact that many trees are of far greater value while comparatively young than when they become old and matured.

The carriage manufacturer guarantees his wheels to be of young, second growth hickory; none other will be permissible, and no other substance will take its place. The great wagon manufacturing factories of Indiana will not deny that young, live, thrifty oak is far stronger, more elastic and better suited for their work than old, brittle wood of larger trees. What

pioneer Hoosier ever took an ax handle from a tree two feet in diameter? No, he sought the young and thrifty pecan or shell-bark hickory, which possesses the strength, elasticity and smoothness required for this purpose.

If the beautiful grain of quartered oak is the principal requirement, then a tree of thirty to fifty inches diameter must be found, but in the great majority of uses to which wood is applied, trees from twelve to twenty inches diameter are better than those which are larger.

In the growth of a tree there is but little connection between the central heart wood and the outer sap and bark. Often the heart has been formed, outlived many successive quantities of sap and bark, and has died, become brittle and fallen away into dust, while the outer growth continues a thousand years after the central portion has entirely disappeared. I know of one giant cedar in Washington 65 feet of girth and 265 feet in height, which is alive and growing thriftily in its outer walls, which are but three or four feet in thickness, yet this hollow tree has been for ages the abode of wild animals.

Youth is life, energy, strength, vitality, elasticity, in lumber, or trees, as well as animal life.

Careful measurements made by the writer in the last thirty years, and observations in nearly all the States in the Union, establish the fact that young and thrifty trees develop very rapidly, many species enlarging their trunk diameter one inch each year up to the twentieth year, after which, owing to the exhaustion of plant food within reach, and interference by roots of adjacent trees, the growth is somewhat diminished.

Average annual increase in girth after planting:

Ash	2.8
Birch	4.4
Buckeye	2.1
Chestnut	2.9
Catalpa	3.4
Cottonwood	7.0
Elm, American	3.2
Hemlock	1.7
Hickory	2.4
Honey locust	3.0
Kentucky coffee tree	2.6
Larch	3.0
Locust	4.0
Lombardy poplar	5.5
Lime	3.3
Maple, white	5.8

Maple, red	2.0
Maple, sugar	2.1
Mulberry	4.0
Oak, red	3.3
Oak, black	2.3
Oak, burr	2.5
Oak, willow	2.5
Pine, white	2.2
Sweet gum	2.6
Sycamore	3.9
Spruce, Norway	2.4
Tulip trees	2.7
Weeping willow	7.0
Wild cherry	1.8

Investments are frequently made for the benefit of minor children. What better or safer security can a man make than in real estate upon which is planted a forest that in twenty years will produce sawing timber and merchantable lumber?

In a natural grove of mixed woods but a small proportion of the trees possesses great value, the majority being inferior growths. This is owing to Nature's method of planting, through the agency of birds, animals, the wind and flowing waters, as well as by primitive man; hence the distribution is very irregular. It is important in establishing a forest plantation for economic purposes that they be compactly planted in systematic order, and as a rule each species separately. Nature has one great purpose to accomplish, while man will have an entirely different object in view. Nature never observes straight lines; man must do so, if he would make the best use of his estate. Forest trees vary greatly as to the space required. Some will thrive while standing quite closely, although others demand much greater room for their fullest development. If planted too thickly, unless thinned, they suffer from insufficient food and moisture, afterwards becoming irreparably ruined.

Those trees which naturally make a broad, spreading top, should be closely planted—perhaps 4x4 feet, in order to aid in forming an upright, single trunk; after this has been attained, remove the surplus trees gradually.

Probably the quickest return may be obtained from black locust, one year plants of which may be purchased at from \$2 to \$3 per thousand. In six or eight years they will make fence posts.

The locust will admit of close planting, 8x8 feet being ample for coppice. It will thrive on rough and poor soil, grows quickly from the stump

after being cut, soon becoming sufficiently large for posts. While it will live for more than half a century, its value does not increase greatly after the fifteenth year, and should then be cut.

In the Blue Ridge Mountains of Virginia are some original forests of locust, although its dissemination was not so broad as many forest trees. The hard and durable wood of this tree makes it invaluable for many purposes.

The catalpa is a very rapid growing tree, a native of Indiana, and the most durable wood in the United States, having been found in good condition after one hundred years' service as posts and stockade forts. It attains a diameter of twenty inches and height of thirty to forty feet in two decades, being sufficient for a telegraph pole or for five railway cross ties, or it may be sawed into two hundred feet of lumber. Ten acres planted with catalpa at 16x16 feet, will contain 1,700 trees, which in twenty years possesses a value of \$4,000.

This tree is easily grown from seed, although it is preferable to set one year plants, which are sold at about \$2 per thousand. Otherwise it should be grown one year in a seed-bed.

This tree will not endure neglect, and must be cultivated for several years; a growth of sod is fatal to a catalpa grove. If a straight and long trunk is desired, it should be crowded by dense planting, say 4x4 feet, removing surplus trees in eight to ten years, the sale of these extra trees will pay for the entire cost of the plantation. During the coming fifty years the American railway system will require 10,000,000,000 cross ties, 10,000,000 telegraph poles, and a vast amount of sawed lumber for which the catalpa is eminently adapted. Who will aid in supplying this demand? Systematic planting, thorough tillage and timely thinning are the requirements.

The oak is at present our most valued tree, as it ever has been, and is of great longevity. Some varieties are very slow growth others are more rapid. The willow oak and burr oak increase from one-half to three-quarter inches diameter per annum. The oak requires shade and shelter for several years, and should be given from twenty to twenty-five feet space, being one of the few species which it is preferable should be planted with other trees.

As the supply of walnut has been exhausted in America, so the oak is rapidly disappearing and can not last as a commercial wood more than ten years into the twentieth century. Black walnut, butternut, elm, chestnut, all grow quickly, and should stand twelve to sixteen feet apart. Yet, for a few years they must be much closer.

These woods will always be found in demand if a supply can be grown. Ten acres of any of them will in twenty years possess a value greater than

\$1,000 at interest during the same period. The lumber from walnut, black and white, some years ago, sold for fabulous prices, and was in such demand that these trees were almost exterminated. When the end came, and quartered oak was substituted for walnut and cherry, these woods ceased to bring good prices. If every land owner in Indiana would plant a walnut grove to-day, a quarter of a century hence the lumber would bring \$75 per thousand feet, or more than \$2,000 per acre.

The honey locust is one of the neglected and unappreciated trees. While scattering trees are found almost everywhere, there are no large forests of this timber, and it has not come into use largely, as no supply could be obtained. The wood is quite valuable, of reddish color, hard and durable, having a fine appearance when dressed for furniture. It is hardy throughout the State, of rapid growth, quickly making posts, fuel and lumber. It is classed with oak, by railways, for cross ties. A variety of the *gleditschia (aquatica)* growing in swamps is not so durable. This may be distinguished by absence of honey in the pods, which are much shorter than the three-thorned sort, the thorns also being single in *aquatica*.

This is one of the admired street trees of the National Capital, and will thrive when many other trees fail. Nature distributes the honey locust mainly by wild animals and cattle, which devour the sweet pods and deposit the seeds in clumps. Trees two feet to thirty inches in diameter and fifty to sixty feet high are often seen in rich woods. It should be planted thickly and thinned to twelve or sixteen feet for permanent forest. Any quick-growing, soft-wood timber may be used as a filler for this or other timber to crowd it into upright growth, and prevent the formation of low-growing side branches.

WILD BLACK CHERRY.

In former years this was in great demand for fine furniture and inside finish, but with the advent of machinery and mammoth factories, the visible supply soon ceased, and it can no longer be obtained in quantities. It is worked easily, with a fine grain, rich color, taking an exquisite polish, giving it a high value. Few trees make a more rapid growth, and none would give greater financial returns, were a large quantity planted. It is easily transplanted while young, the berries being strewn in nursery rows. If allowed to become dry, the seed is ruined, and will not germinate.

AMERICAN CHESTNUT.

This is not extensively sawed into lumber, but is largely used for rails, fence posts, fuel and telegraph poles. In thickets on good land, it forms wood very rapidly, having a tall, straight body, but in open woods is in-

clined to spreading habit, with short trunk. The nuts have a commercial value, possessing a fine flavor and being highly nutritious. The chestnut is native to a few localities in Indiana, but is not generally distributed throughout the State. Yet there are numerous trees in cultivation which show that it will thrive in almost every county. It is worthy of extensive cultivation.

LARCH.

Northern Indiana has some tamarack, or American larch, which prefers a moist location. I have successfully grown it in Southern Indiana on a bed of gravel which is always affected by summer droughts, where its diameter is eight inches in a dozen years. The foliage is handsome, resembling the evergreen, although it is deciduous. In Europe the Scotch larch is very largely planted on waste mountain lands, and is believed to be very profitable. Both are of rapid growth, upright habit, easily transplanted, and valuable when grown, for ties, posts and telegraph poles and lumber.

MULBERRY.

The American mulberry is seldom used except for posts and rails, not being found in large quantities. The variety imported from Russia possesses greater hardiness in the North. Both are durable, of quick growth, and should be planted by every farmer in America for the birds which relish the berries, as by encouraging the birds the losses from insect depredation would be greatly reduced.

THE FOREST NURSERY.

Usually farmers have all the work they are capable of performing, and cannot add the care of a nursery, and it is not worth while to attempt it, for all forest seedlings may be cheaply purchased from nurserymen, whose time is entirely devoted to this occupation and who thoroughly understand the business.

Evergreens are very delicate while small; they require shade and shelter for several years, and but few skilled nurserymen grow them from seed. Most deciduous trees are easily transplanted when one year old, and much labor is saved by planting in nursery rows, strewing the seeds thickly, and giving careful cultivation.

The ash, maples, basswood, beech, box elder, wild cherry, catalpa, chestnut, elm, hackberry and mulberry are grown from seed.

The willows, cottonwood and poplars, as also mulberry, are grown from cuttings which root quickly. It is difficult to collect seeds of the poplars and willows. Honey locust, Kentucky coffee tree, and black locust have hard shell coverings which do not soften so as to enable the seed to

germinate the first year. These should be scalded, allowing the seed to remain in hot water some time. Cattle which eat the honey locust pods distribute the seeds which invariably grow, the heat of the stomach softening the shell. Nuts and acorns succeed better when planted in permanent woods.

The State demands the same or a greater revenue from taxation upon woodlands which produce no income to the owners while retained as such, as upon lands producing annual crops and a good interest upon their investment.

The policy of the government, therefore, is to compel the owners of timber lands to denude such lands because the burdens of taxation upon unproductive investment is too onerous to be borne. One of the last tracts of grand old forest in Ohio County was taxed \$5,000 for the fifty acres, yet it has not produced anything for its owners during half a century. Recently it passed out of the hands of the owner who so prized it, and the new possessors, bent solely on business, cleared off the tract, rather than pay taxes upon it. This woods was in decline; had it not been so, the result would have been the same. The true policy of the State should be to encourage the maintenance of at least one-tenth of the land in forest, and to this end it should release such timber land from taxation.

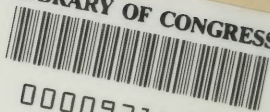
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